STRUCTURAL DESIGN FLIGHT SPEEDS

Design Flight Speeds

The design level flight and dive speeds for stress analysis purposes are selected as follows:

(a) Level Flight High Speed, V_H

IFR Airplane - At the design gross weight the design level flight speed shall be so chosen as to permit refueling at M = .75 at 20,000 feet in level flight. At altitude between 20,000 and 30,000 feet the true speed shall be held the same as that established per above for 20,000 feet. Above 30,000 feet the speed shall be held to a constant Mach number. Below 20,000 feet the level flight speed shall be a constant indicated speed equal to that established at 20,000 feet per above. At the maximum alternate gross weight the design level flight speed shall be held to that which will result in gust load factors at V_H the same as the pertinent maneuver factors except that the Mach numbers, true speeds and dynamic pressures established for the design gross weight shall not be exceeded.

At weights between the design gross weight and the maximum overload gross weight the level flight design speeds established for the latter gross weight shall be used.

Cargo Airplane - The design level flight speed shall be determined in the same manner as that used for the determination of the level flight design speeds for the IFR airplane at maximum alternate gross weight. This results in design level flight speeds for the cargo airplane with normal maximum cargo identical with those of the IFR airplane at its design gross weights.

(b) Dive Speed, V_D

IFR Airplane - At the design gross weight at 20,000 feet the design dive speed shall be sufficiently higher than the design level flight speed at this altitude to permit a 7 1/2° dive starting at V_H to be maintained for 20 seconds. From 20,000 to 30,000 feet a constant true speed equal to that established per above at 20,000 feet. The Mach number so resulting at 30,000 feet will be maintained at all altitudes above 30,000 feet. Below 20,000 feet a dynamic pressure equal that established above at 20,000 feet will be observed. At the maximum alternate weight the design dive speed shall be so chosen as to maintain the same ratio between V_H and V_D as results in the case of design gross weight discussed above. At gross weights between design gross weight and maximum alternate gross weight, the design dive speed established per above for the maximum alternate gross weight shall be used.

Cargo Airplane - The relationship between V_H and V_D will be as described in the IFR overload condition.